

REMARKS

Reconsideration is respectfully requested of the Official Action of April 29, 1996 relating to the above-identified application.

A petition for a three month extension of time together with the fee associated therewith for a small entity is filed herewith.

Claims 1-13 have been amended to more particularly point out and distinctly claim applicants contribution to the art. Thus, the foregoing amendment addresses the points made by the Examiner under the heading "Claim Objections" beginning on page 2 of the Official Action. In addition, an Abstract has been presented herewith.

In view of the foregoing amendments, it is respectfully submitted that the claims comply with 35 U.S.C. §112.

The rejections of claims 1, 2, 9, 10, 15 and 16 under 35 U.S.C. §102(b) as being anticipated by Attridge et al. is traversed and reconsideration is respectfully requested. The Attridge et al. patent application publication, WO90/01166, was cited by applicant and discloses an assay techniques where a binding material is coated on a particular type of substrate. In a preferred embodiment (page 13) an antigen as the ligand and an antibody to the antigen constitutes the pair for carrying out the assay. Table 1 (page 14) shows specific ligands and binding partners, one of which is identified as a

carbohydrate. However, claims 1 and 2 of the present invention call for a cellulose derivative which is not shown in the reference. Consequently, the reference fails to anticipate the claimed subject matter. No information is given as to the use of the carbohydrate derivatives described in the present invention for coupling to a biosensor surface.

The rejection of claims 1, 2, 11 and 16 under 35 U.S.C. §102(b) as anticipated by Karube, European Patent 0215669 is traversed and reconsideration is respectfully requested. Karube also fails to disclose the use of sugars or carbohydrates for use in the system described in the present application. Karube shows a biosensor that is a piezoelectric crystal made by applying an adsorbent biochemical or organic compound to the crystal. No carbohydrate derivatives as defined herein are shown. Therefore, the reference fails as an anticipation.

The rejection of claims 3-8 and 12 and 13 under 35 U.S.C. §103 as unpatentable over Attridge et al. taken with applicant's earlier U.S. patent 4,918,009 is traversed and reconsideration is respectfully requested. Applicant's earlier patent describes a method for synthesis of carbohydrates and carbohydrate glycosides and discloses that carbohydrates may be used in diagnostics (see for example the tables in columns 9 to 14 of the Nilsson patent). These are examples of carbohydrates but not of carbohydrate derivatives. The reference does not mention the use of carbohydrate derivatives for coupling to

biosensor surfaces for use on biosensors.

Attridge et al. describes, inter alia, a procedure for coating the silver coated glass slides with trimethoxysilane for binding an antibody. This method is not applicable for carbohydrate binding. No motivation exists for modifying the Attridge et al. invention with the substances of Nilsson. Therefore, the rejection is flawed and should be withdrawn.

The rejection of the claim 14 under 35 U.S.C. §103 as unpatentable over Attridge et al. is traversed and reconsideration is requested. With regard to the gold surfaces, it has not been previously shown that carbohydrates can be bound with retained activity to such surfaces or how it could be done. It is true as mentioned by the Examiner on page 6 that SPDP and other thiol compounds have been used for coupling of ligands or proteins to solid supports, but then the preactivated solid supports; that is, those having free SH groups or other active groups such as tosyl groups have been used. The invention describes the use of thiol containing compounds for binding to the carbohydrate derivative by way of the sulphur atom directly to the gold surface. The binding of a carbohydrate derivative in this manner has not been suggested prior to the present invention. Neither has the use of such a surface for any biological application been suggested.

In summary, applicant emphasizes that his invention concerns carbohydrate derivatives which specifically bind to a

protein virus or a cell in a sample. This has not been previously disclosed or suggested in the prior art. Accordingly, applicant respectfully submits that the Examiner's rejection is not well considered and should be withdrawn.

Favorable action at the Examiner's earliest convenience is respectfully requested.

Respectfully submitted,

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